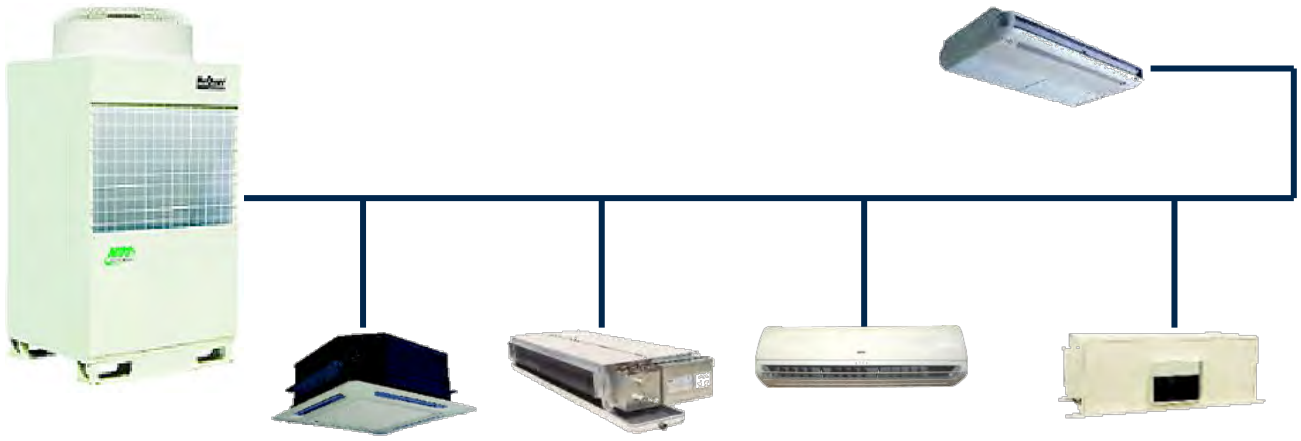
User Manual

MDS Selection Software
Digital Variable Multi



McQuay Air Conditioning

Engineered for flexibility and performance ™

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This manual is prepared based on the latest version of MDS Selection Software at that time (Digital Variable Multi Version 3.3). Please take note that any MDS Selection Software that is older than current latest version will not be supported by OYLM.

⚠ Caution

Please retain this manual carefully for further reference if there is any problem

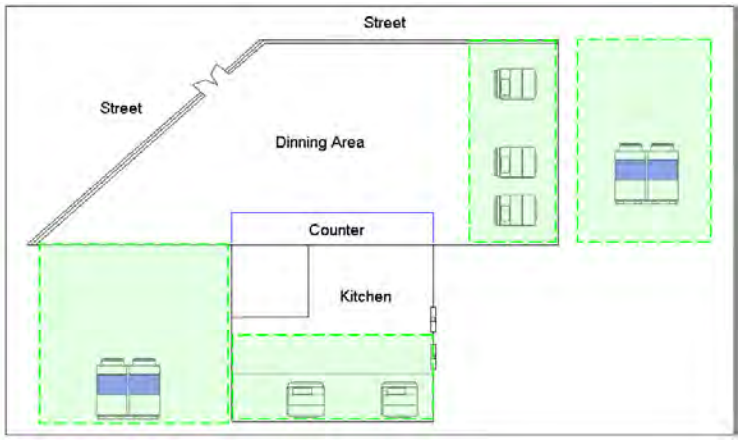
1.0 Introduction to Selection Process

1.1 Study the floor plan layout and confirm the conditioned space

First, obtain the architectural base drawing or building floor plan layout from the client. Study the drawing carefully and determine the conditioned and unconditioned space.

1.2 Select the locations available for outdoor units and indoor units

Review the site and communicate with client. Then, select the locations for outdoor units and indoor units inside the conditioned space. For example, outdoor and indoor units can be located in shaded area [ ].



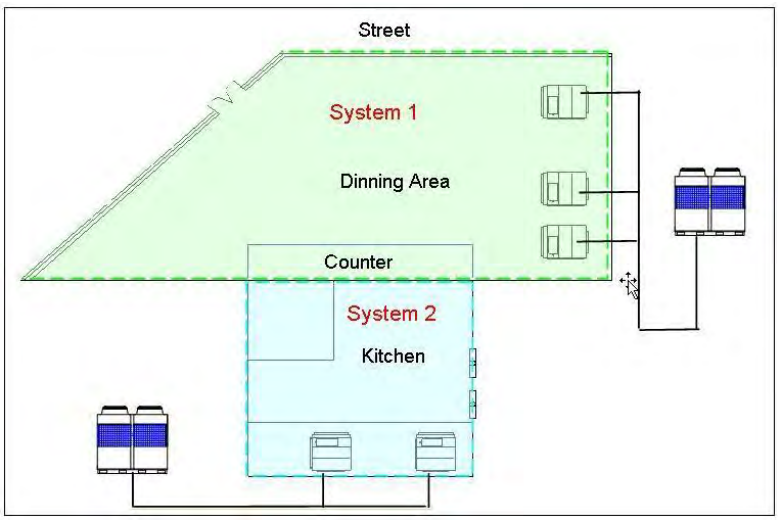
1.3 Select the model for indoor unit

Select suitable model for indoor unit according to the function and requirement of each air conditioned space. The table below shows the indoor unit models offered by McQuay, together with their capacity respectively.

Model		Capacity Range (kW)	
		Cooling	Heating
Ceiling concealed	MCCD/M5CCD	2.8 – 16.4	3.2 – 18.5
Ceiling cassette	MCKD/M5CKD	2.8 – 14.0	3.2 – 16.0
High static ducted blower	MDBD	22.4 – 28.0	25.0 – 31.5
Ceiling convertible	MCMD/M5CMD	3.6 – 16.4	4.0 – 18.5
Wall mounted	MWMD/M5WMD	2.5 – 6.5	2.8 – 7.4

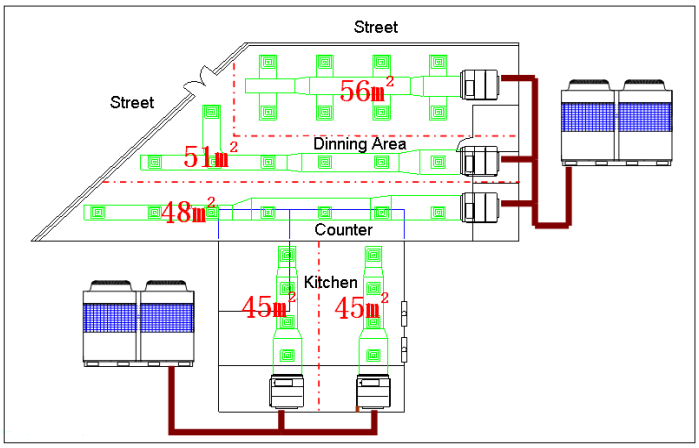
1.4 Partition the air conditioning system

Decision has to be made on how many air conditioning systems are needed to condition the building. Divide the building into several partitions of air conditioning systems and set the connection sequence of indoor units according to the distance and location relative to outdoor unit.



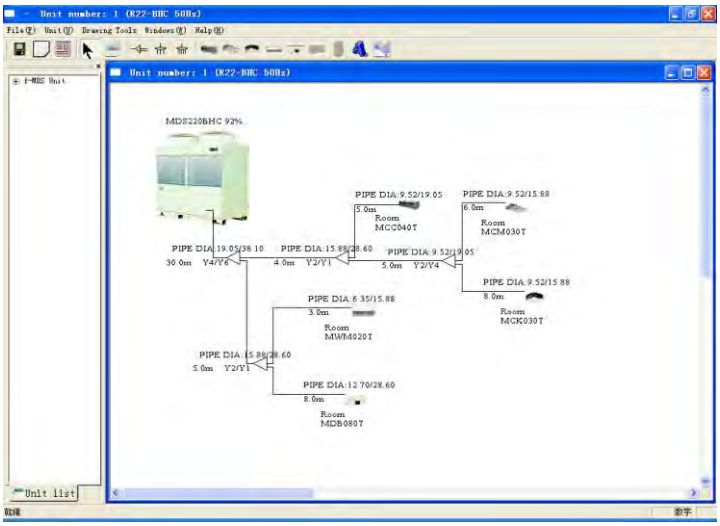
1.5 Calculate the occupying area of each indoor unit

Calculate the occupying area of every indoor unit. It is important to take into account on the heat load within the conditioned space.



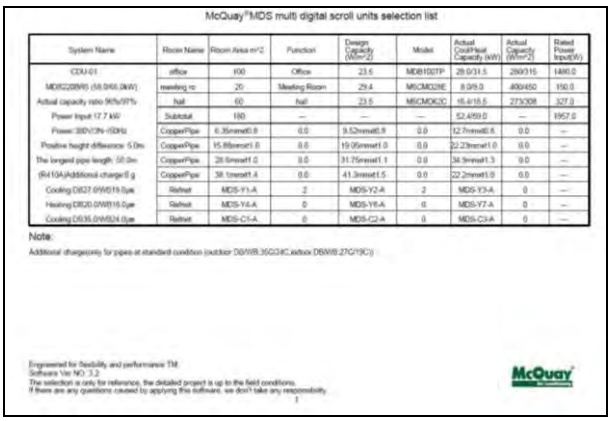
1.6 Selection through Software

Select the outdoor model by entering information such as piping length, indoor models, system layout and design condition. Through the selection software, piping diameter, refnet and distributor will be selected.



1.6 Output selection report

After completion of selection, report can be output in excel or PDF format for ordering.

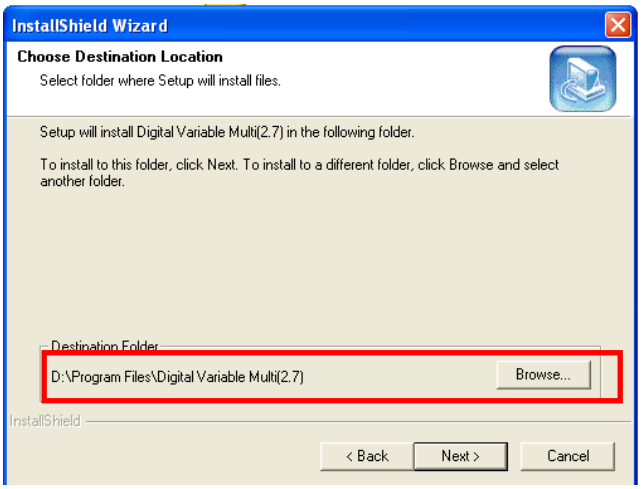


2.0 Software Operation

2.1 Installation of selection software

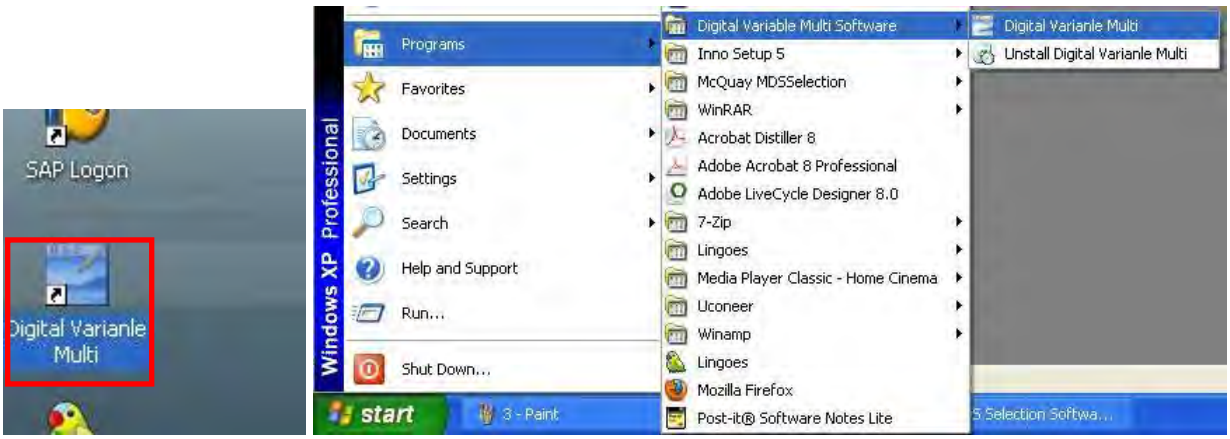
The installer for MDS Selection Software (Digital Variable Multi) can be downloaded from e-Biz. Kindly login to e-Biz and go to e-Product > System Selling Kit > Multi Digital Scroll > Selection & Commissioning Software to download the file. During installation, kindly choose the desired location (refer to diagram on the right) and click “Next” to continue.

Remark: If the software does not work normally when it is installed on the system disk, kindly uninstall the software and re-install it in disk location other than system disk.

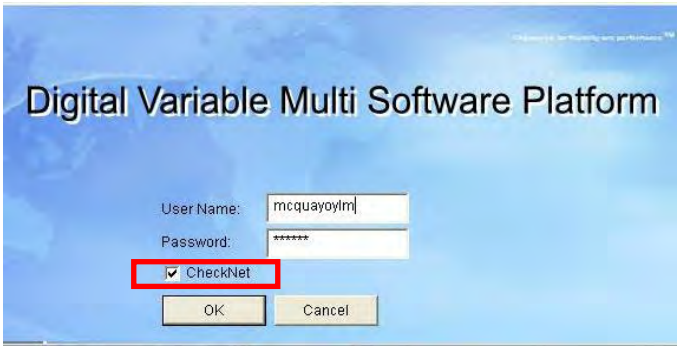

InstallShield Wizard
Choose Destination Location
Select folder where Setup will install files.
Setup will install Digital Variable Multi(2.7) in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
D:\Program Files\Digital Variable Multi(2.7)
Browse...
InstallShield
< Back
Next >
Cancel

2.2 Start the selection software

After installing the software, run the selection software by double-click the desktop shortcut icon. Alternatively, it can be run by go to Start > Programs > Digital Variable Multi Software > Digital Variable Multi.



During start-up of the software, a login window will be prompt. Kindly enter your username and password accordingly. If internet connection is available, please ensure the **CheckNet** is ticked before clicking **OK** to use the software (refer to diagram on the right). If internet connection is not available for the moment, uncheck the **CheckNet** dialogue box before log in.



When there’s any update, an update dialogue box will prompt out and begins to download the necessary files to update the software’s database. Once update is completed, users have to login again in order to use the software. If there’s no update available, the software will enter the selection page directly.

Please note that during first time login, internet connection is a must as the software needs to update the product database before usage. Besides that, username will be terminated if:

- User never login into the software for 90 days.
- User did not login with **CheckNet** for 60 days.

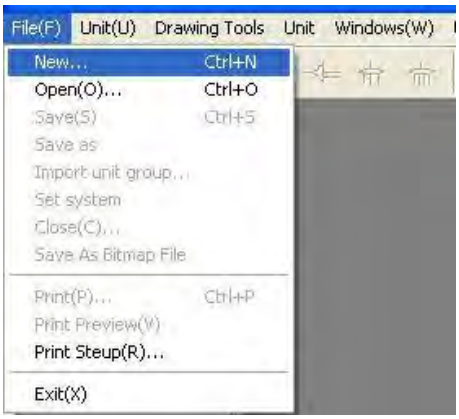
Remark: It is advisable for user to connect to the internet and tick the "checknet" dialogue during every login. This is to ensure the software database is up-to-date in order to avoid any wrong selection.

If you are unable to connect to the server, kindly ensure that you are running the software as administrator and also ensure connection to the server (IP: 210.75.20.9) is not blocked by any firewall.

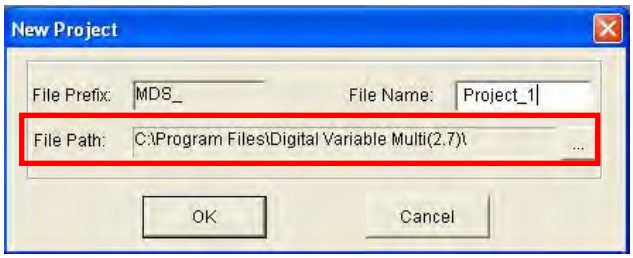
For users who wish to register for Username and Password, kindly download the User Application Sheet from e-Product > System Selling Kit > Multi Digital Scroll > Selection & Commissioning Software, fill up and sent to ganpwk@oyl.com.my.

2.3 Create new project

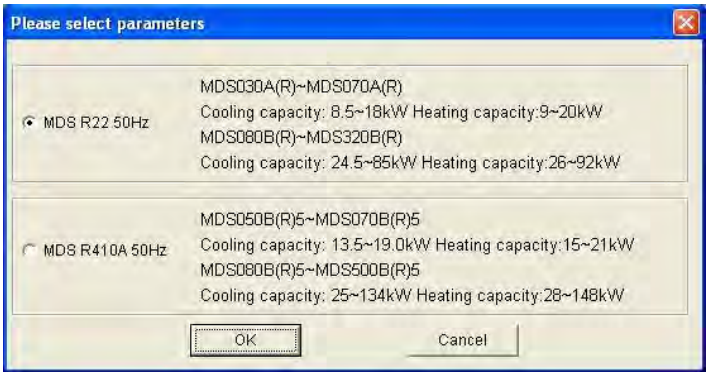
After login into the selection software, you will be prompt with the selection software's interface. To create a new project, go to File > New.



Next, key in the desired project name (file name) and click **OK**. You may select the location where the files for this project will be saved (as highlighted).



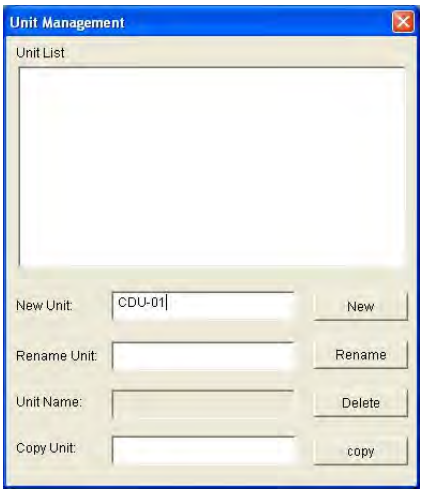
Select the appropriate system type according to refrigerant and design temperature requirement.



Under this project folder, user may starts to create MDS systems by clicking **Unit Management** icon or go to Unit > Unit Management. A dialogue box will pop up, fill in the name of the **New Unit** (For example: CDU-01) and click “New” to proceed to the interface of unit selection (refer to diagram below).

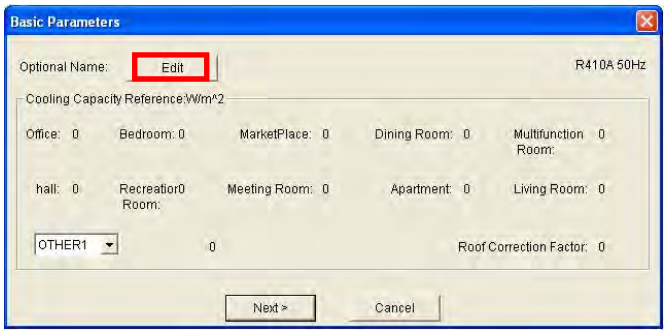
Remark: If user wants to rename the system, simply select the **Unit Name**, and then key in the desired name in the **Rename Unit** column and click **Rename**. Similarly, user may delete a system by selecting the system and click **Delete** and copying a system by selecting **Copy** (useful when creating similar system in one project).

Please take note that renaming of system name can only be done within the software. If user rename the project file manually without using this software, the file will no longer be recognized by the software and it will failed to be opened in future.

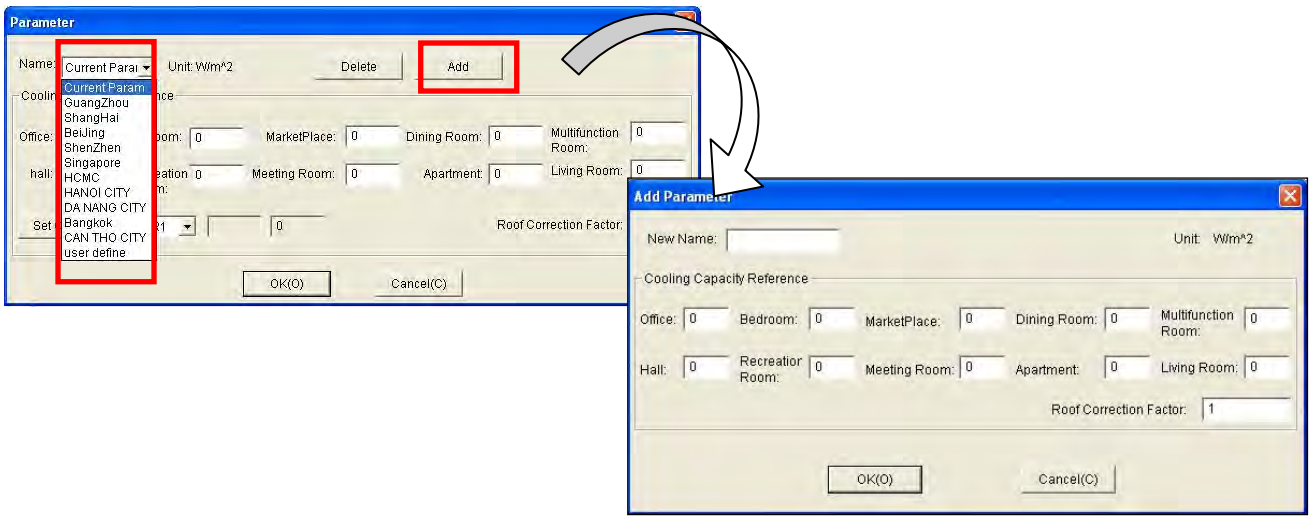


2.4 MDS system selection process

To begin with the selection, click on the **MDS** tab in the tool bar and a new dialogue box will pop up (refer to diagram below).



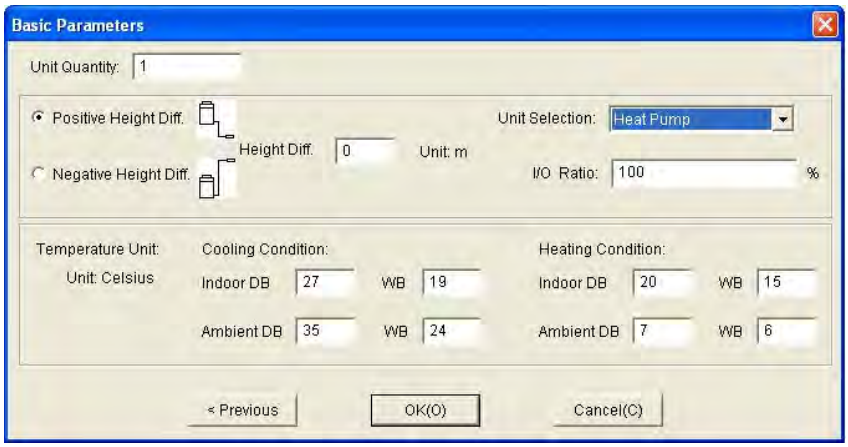
Click **Edit** to set the **Cooling Capacity Reference** according to city location. **Cooling Capacity Reference** for some city is already available. User may select directly if appropriate. If desired city is not within the list, user can add in new reference by clicking **Add**.



After selecting the **Cooling Capacity Reference**, click **OK** to proceed to next screen. Here, users have to define the basic parameter of the outdoor unit:

- Unit Selection: Determine the model of MDS system (cooling only or heatpump model)
- Height Diff.: Determine the position of outdoor and height difference between outdoor and indoor unit.
- I/O Ratio: Determine the designed input/output ratio. Range from 100-120%.
- Cooling Condition: Determine the design ambient and indoor condition under cooling mode.
- Heating Condition: Determine the design ambient and indoor condition under heating mode.

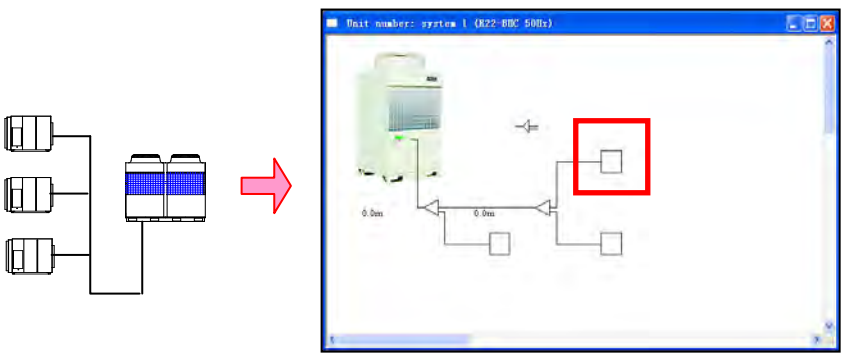
Remark: For I/O Ratio, it is recommended to set as 100%. Please do not select 120% if the simultaneous use factor is high.



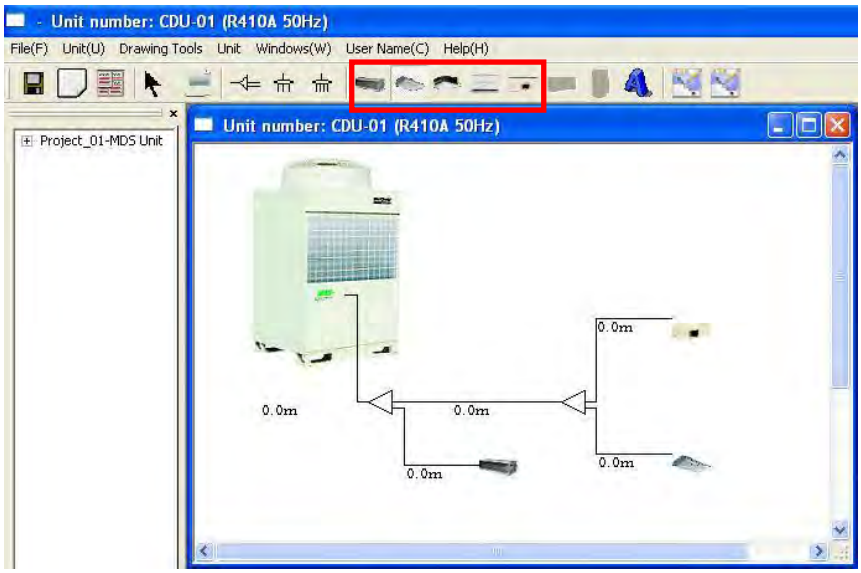
Remark: Positive Height refers to outdoor installed above indoor units, while Negative Height refers to indoor installed above outdoor unit.

After selecting the **Basic Parameter** for outdoor unit, click **OK** to proceed. The mouse cursor will now turn into an icon of MDS outdoor unit. Simply click on the empty selection space to continue.

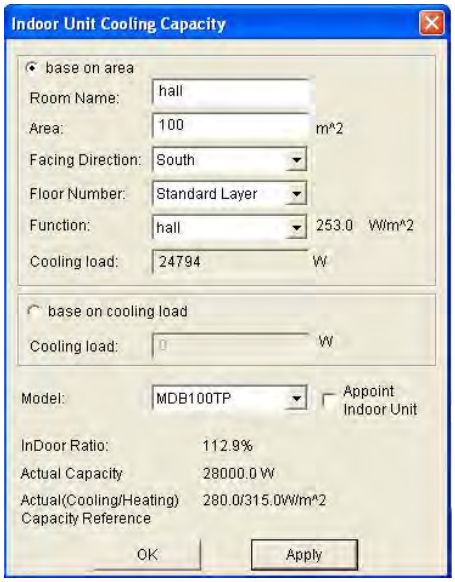
Selection continues with inserting the refnet or distributor joint to the drawing. This can be done by clicking refnet or distributor icon. The mouse cursor will turn into the icon of refnet or distributor, and user can now construct the system frame work step by step according to the designed layout of indoor and outdoor unit. Simply click the square boxes to place the refnet or distributor into the system.



After the system framework is finished, select the indoor units according to project requirement. Select desired indoor models by clicking the tab on top (refer to figure below, highlighted), follow by clicking the square box within the selection space to place the indoor unit into the system.



To complete indoor model selection, double click on the icon of the respective indoor unit and a new window will pop out.



Here, user can choose to complete the indoor unit selection by any of the two methods:

2.4.1 Selection base on area

By using this method, users are requested to enter information such as:

- Room Name: Name of the conditioned room
- Area: Area of the conditioned room
- Facing Direction: The conditioned room's facing direction (North, East, West, South)
- Floor Number: Floor specification for the conditioned space.
- Function: Function of the conditioned space. This will determine the cooling load required.

After entering this information, click **Apply** and the recommended indoor unit will be displayed in the **Model** section. Click **OK** to select the indoor.

2.4.2 Selection base on cooling load

If the specific cooling load for the conditioned space is known, user may use this method to select for indoor models. First, select **base on cooling load** and enter the **Cooling Load** into the dialogue box. Next, click on **Apply** and the software will automatically select an appropriate indoor unit for the required load. Click **OK** to confirm the selection.

2.5 Completing MDS system selection process

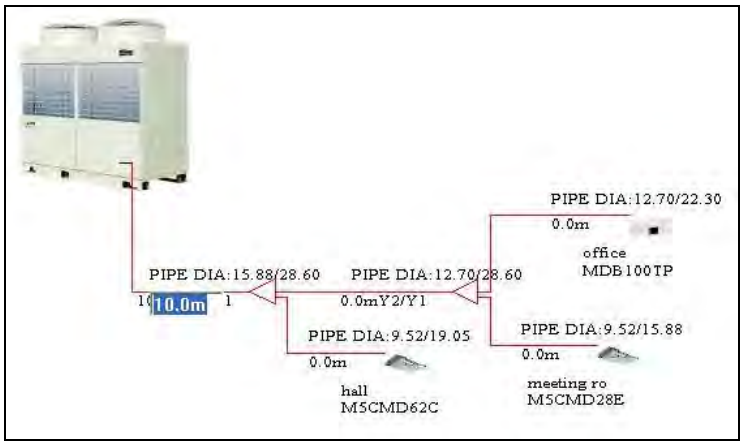
After completing the selection for indoor units, the outdoor unit needs to be selected. This is done by clicking the **Calculation** icon in the toolbar.

Unit number: CDU-01 (R410A 50Hz)
File(F) Unit(U) Drawing Tools Unit Windows(W) User Name(C) Help(H)
Project_01-MDS Unit
Unit number: CDU-01 (R410A 50Hz)

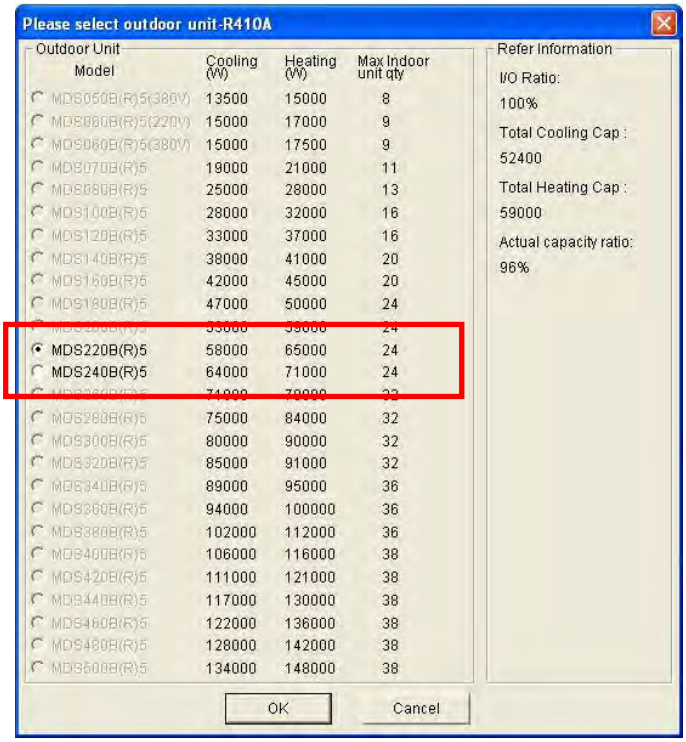
There are two calculation tabs in the toolbar. On the left is the **Calculation** tab while on the right is the **Quick Calculation** tab. User may choose to use either tab to select the outdoor unit.

2.5.1 Selection with Calculation tab

In order to use the **Calculation** tab, users have to enter the length of each piping within the MDS system. This can be done by moving the mouse cursor over the value of piping length. The piping length value will turn into blue and user can now enter their desired piping length to continue.

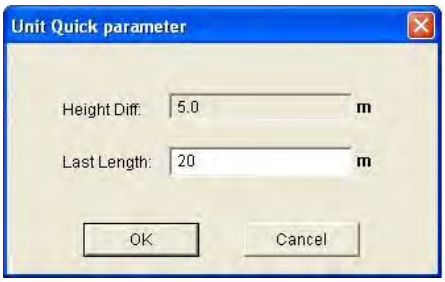


After all piping length is determined, user can now click the **Calculation** tab in the toolbar and a new window will prompt with recommended outdoor selection for this system. Select the desired outdoor model and click **OK** to complete the selection process.



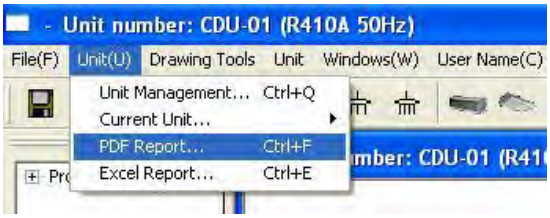
2.5.2 Selection with Quick Calculation tab

If user uses Quick Calculation to select for outdoor unit, a new window will prompt out. Here, users have to input the length of the longest branch within the system in **Last Length** and click **OK**. A new window will prompt with recommended outdoor selection for this system. Select the desired outdoor model and click **OK** to complete the selection process.



2.6 Output selection report

Upon completion of the selection process, user can choose to generate a report for this selection in either PDF or Excel format. Simply go to Unit > PDF Report or Excel Report.



Next, user can choose to select **refnet with insulation** or **without insulation** and click **OK** to generate the report.

2.7 Other features

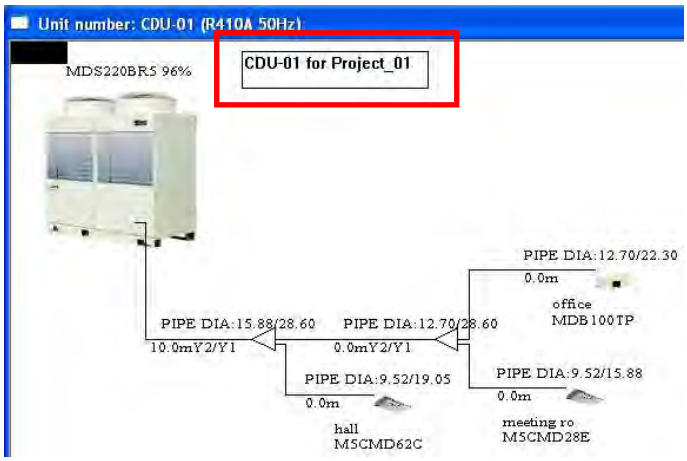
2.7.1 Change system type

When user requires changing the system type (For example: changing from R22 system to R410A system), click on the **Set System** tab in the toolbar to reset it.

Remark: All indoor units must be reselected after changing the type of system to obtain the correct indoor unit model.

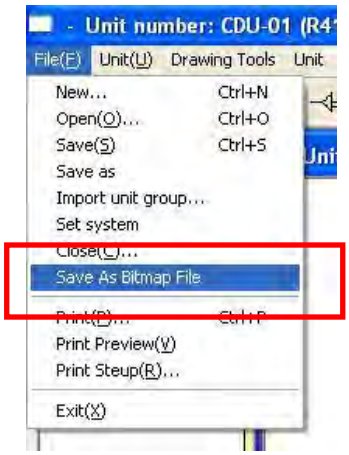
2.7.2 Adding text into system layout drawings

To differentiate each system layout drawings, text can be added into the layout by using the **Text** tab .



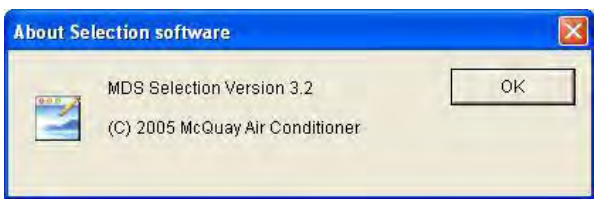
2.7.3 Output system layout drawings

All system layout drawing can be output to bitmap (.bmp) image file. Go to File > Save As Bitmap File.



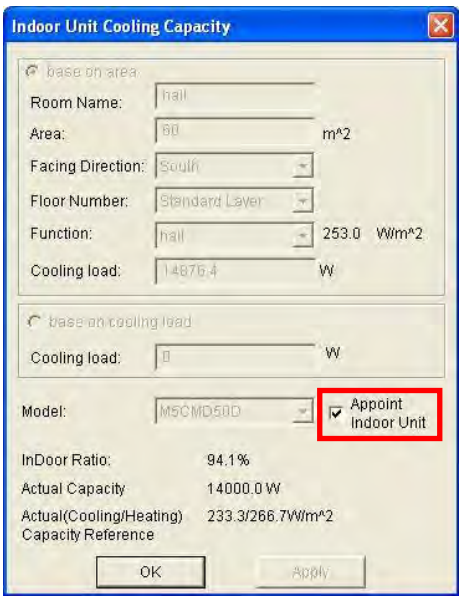
2.7.4 Version information

User may check the software version by go to Help > About MDS.



2.7.5 Locking function for indoor unit selection

To prevent the indoor unit model to change under any circumstance, user can choose to tick on **Appoint Indoor** checkbox when selecting indoor unit.



2.7.6 Password changing

To ensure the software is protected and used only by authorized personnel, the password of the software can be changed manually. Go to User Name > Change Password. User will have to enter the existing password before changing to the new password. After the password is changed, kindly inform the software administrator through this e-mail address: ganpwk@oyl.com.my

2.7.7 Unit changing

User may change between metric and imperial unit by go to Unit > Imperial Unit or Metric Unit.

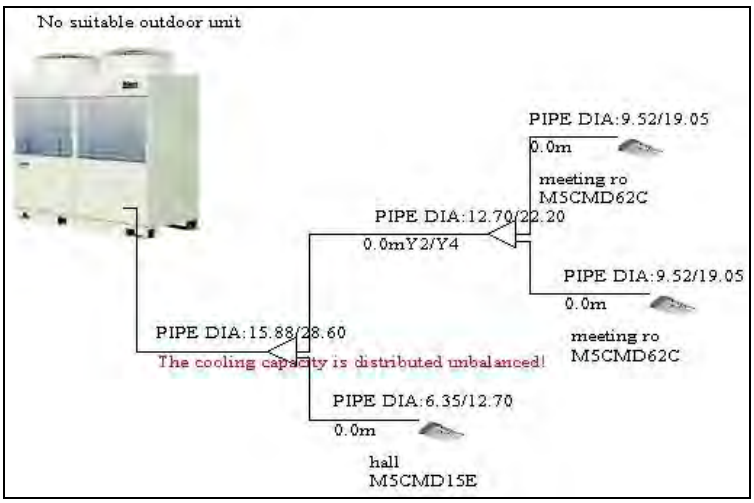
2.8 Error messages

When designing MDS system, there are a few limitations which have to be taken into consideration:

- Maximum connectable indoor
- Piping length limitation
- Refrigerant distribution limitation

Please refer to appendix for detail tables and description on each limitation. Once a selection has exceeded the limitation, error message will pop out to request user to amend the system design.

2.8.1 Imbalance cooling capacity distribution



For every refnet joint in a system, the smaller branch shall occupy at least 10-15% of the total capacity distributed by that refnet (depends on piping length and overall system layout), while the larger branch shall sustain the remaining. If the distribution is imbalance, a warning will appear.

Taking the figure above as an example, the smaller branch is supplying 3.6kW of capacity, while the larger branch supply for 32.8kW of capacity. The capacity occupied by the smaller branch is around 10%

2.8.2 Maximum indoor units connectable exceeded

Every outdoor unit has its limitation on the maximum connectable indoor units. Please refer to the following table for indoor quantity limitation. If the selected value exceeds the limit, the following message will appear:
For example: **MDS240 indoor unit amount cannot exceed 24**.

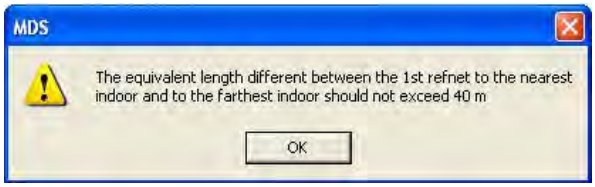
R22 Model	R410A Model	Maximum Indoor Quantity
MDS 030A(R)	-	5
MDS 040A(R)	-	6
MDS 050A(R)	5MDS 050B(R)	8
MDS 060A(R)	5MDS 060B(R)	9
MDS 070A(R)	5MDS 070B(R)	11
MDS 080B(R)	5MDS 080B(R)	13
MDS 100B(R)	5MDS 100B(R)	16
MDS 120B(R)	5MDS 120B(R)	16
-	5MDS 140B(R)	20
MDS 150B(R)	-	20
-	5MDS 160B(R)	20
MDS 180B(R)	5MDS 180B(R)	24
MDS 200B(R)	5MDS 200B(R)	24
MDS 220B(R)	5MDS 220B(R)	24
MDS 240B(R)	5MDS 240B(R)	24
MDS 260B(R)	5MDS 260B(R)	32
MDS 280B(R)	5MDS 280B(R)	32
MDS 300B(R)	5MDS 300B(R)	32
MDS 320B(R)	5MDS 320B(R)	32
-	5MDS 340B(R)	36
-	5MDS 360B(R)	36
-	5MDS 380B(R)	36
-	5MDS 400B(R)	38
-	5MDS 420B(R)	38
-	5MDS 440B(R)	38
-	5MDS 460B(R)	38
-	5MDS 480B(R)	38
-	5MDS 500B(R)	38

2.8.3 Can't get proper refnet or distributor

This error will appear when the software is unable to select a refnet/distributor that meets the requirement of the selection. This error rarely occurs. However, if such error occurs, adjust the cooling capacity ratio between the branches of the refnet/distributor.

2.8.4 Piping length exceeds limitation

When the designed system's piping length has exceeded the limitation of MDS system, an error message will appear.

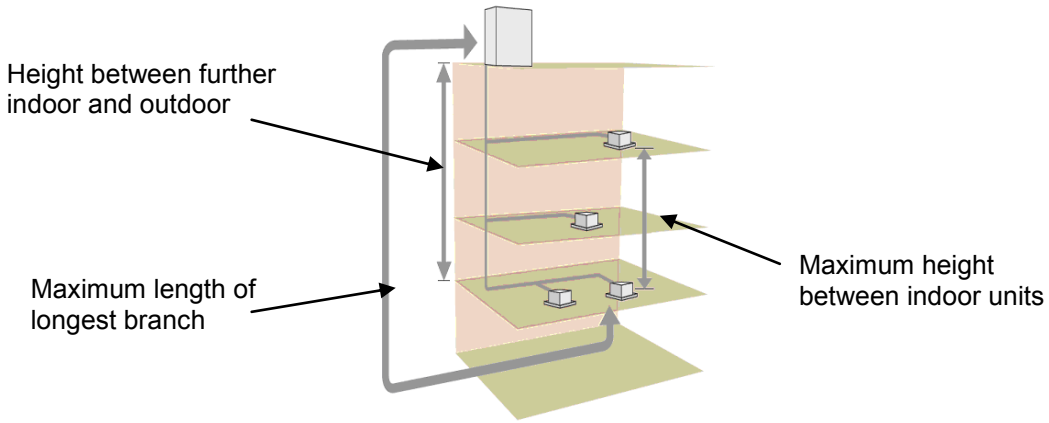

MDS
The equivalent length different between the 1st refnet to the nearest indoor and to the farthest indoor should not exceed 40 m
OK

Please design the system according to the piping limitation stated as below.

Remark: When the longest piping branch has a length which exceeds 90% of the maximum allowable length (refer to the table below):

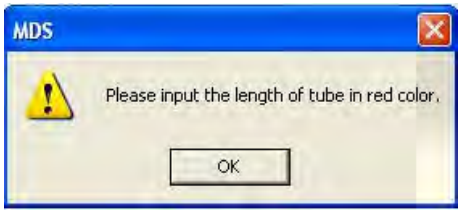
- The gas pipe connected to the unit will automatically increase by one size.
- The refnet pipe will be selected with the new increased size automatically.
- A warning message will appear.

			R-22			R-410A		
Length (m)			3-5HP	6-7 HP	8-32 HP	5HP	6-7 HP	8-50 HP
Piping	Total equivalent length		100	150	350	100	150	500
	Maximum length of longest branch	Actual piping length	50	70	125	50	70	150
		Equivalent length	60	80	150	60	80	175
	Maximum equivalent length from first branch to furthest unit		25	30	40	25	30	65
Height	Between further indoor and outdoor	outdoor above	20	30	50	20	30	50
		indoor above	20	30	40	20	30	40
	Maximum height between indoor unit		15					



2.8.5 Input piping length

When user want to use the **Calculation** tab to select the outdoor unit, the length of every piping has to be enter into the selection drawing. If there is any piping length that is not defined, the error below will show.



Kindly locate the piping in red and enter the piping length before proceed to outdoor unit selection.

2.8.6 Unreasonable unit selection

When ducted blower is selected within a MDS system, other indoor unit should not have capacity lower than 27,000 Btu/h. If unit with capacity lower than that is selected, the following error will show. Kindly re-select the indoor unit accordingly.

3.0 Appendix

3.1 Requirements on size of refrigerant copper pipe of R22 series units

Specification table for MDS-A Series

Type \ Outdoor unit capacity			MDS030A(R)	MDS040A(R)/MDS050A(R)/MDS060A(R)MDS070A(R)		
Between the outdoor unit and the first branch connector						
Liquid pipe			Φ9.52mm×t0.8	Φ9.52mm×t0.8	Φ9.52mm×t0.8	Φ9.52mm×t0.8
Gas pipe			Φ15.88mm×t1.0	Φ19.05mm×t1.0	Φ19.05mm×t1.0	Φ22.23mm×t1.0
Between branch connectors						
Liquid pipe	**Total capacity of all the indoor units that this pipe connects to**	<22.5kW	Φ9.52mm×t0.8			
		22.5kW ≤C<30kW	Φ12.70mm×t0.8			
		30kW ≤C<30kW	Φ15.88mm×t1.0			
Gas pipe	**Total capacity of all the indoor units that this pipe connects to**	<9.0kW	Φ15.88mm×t1.0			
		9.0kW≤C<16kW	Φ19.05mm×t1.0			
		16kW≤C<22.5kW	Φ22.23mm×t1.0			
		22.5kW≤C<33kW	Φ28.60mm×t1.0			
Between the branch connector and the indoor unit						
Liquid pipe	**Indoor units that this pipe connects to**		Consistent with the connector of the indoor unit			
Gas pipe	**Indoor units that this pipe connects to**		Consistent with the connector of the indoor unit			

Specification table for MDS-B Series

Type \ Outdoor unit capacity			MDS080B(R)/ MDS100B(R)	MDS120B(R)	MDS150B(R)/ MDS180B(R)/ MDS200B(R)	MDS260B(R)/ MDS220B(R)/ MDS240B(R)	MDS280B(R)/ MDS300B(R)	MDS320B(R)
Between the outdoor unit and the first branch connector								
Liquid pipe			Φ12.70mm×t0.8	Φ15.88mm×t1.0	Φ15.88mm×t1.0	Φ19.05mm×t1.0	Φ19.05mm×t1.0	Φ19.05mm×t1.0
Gas pipe			Φ28.60mm×t1.0	Φ28.60mm×t1.0	Φ34.90mm×t1.3	Φ38.10mm ×t1.4	Φ41.30mm×t1.5	Φ41.30mm×t1.5
Between branch connectors								
Liquid pipe	**Total capacity of all the indoor units that this pipe connects to**	<16kW	Φ9.52mm×t0.8					
		16kW≤C<22.5kW	Φ12.70mm×t0.8					
		22.5kW≤C<50kW	Φ12.77mm×t0.8	Φ15.88mm×t1.0				
		50kW≤C<85kW	–	–	–	Φ19.05mm×t1.0		
Gas pipe	**Total capacity of all the indoor units that this pipe connects to**	<9.0kW	Φ15.88mm×t1.0					
		9.0kW≤C<1 6kW	Φ19.05mm×t1.0					
		1 6kW≤C<22.5kW	Φ22.30mm×t1.0					
		≥22.5kW<36kW	Φ28.60mm×t1.0					
		36kW≤C<50kW	–	–	Φ34.90mm×t1.3			
		50kW≤C<69kW	–	–	–	Φ38.10mm×t1.4		
		69kW≤C<85kW	–	–	–	–	Φ41.30mm×t1.5	
Between the branch connector and the indoor unit								
Liquid pipe	**Indoor units that this pipe connects to**		Consistent with the connector of the indoor unit					
Gas pipe	**Indoor units that this pipe connects to**		Consistent with the connector of the indoor unit					

Remark:

1. Pipe thickness selection is based on certain material in GB/T1527-1997. If using different material, design pressure must be 3.0 MPa according to local standard.
2. If the units are installed in corrosive environment, the pipe must be 0.2mm thicker.
3. This list shows only the minimum thickness. Bending or stretching may reduce the thickness, please consider the compensation.

3.2 Requirements on size of refrigerant copper pipe of R410A series units

Specification table for 5MDS-B Series

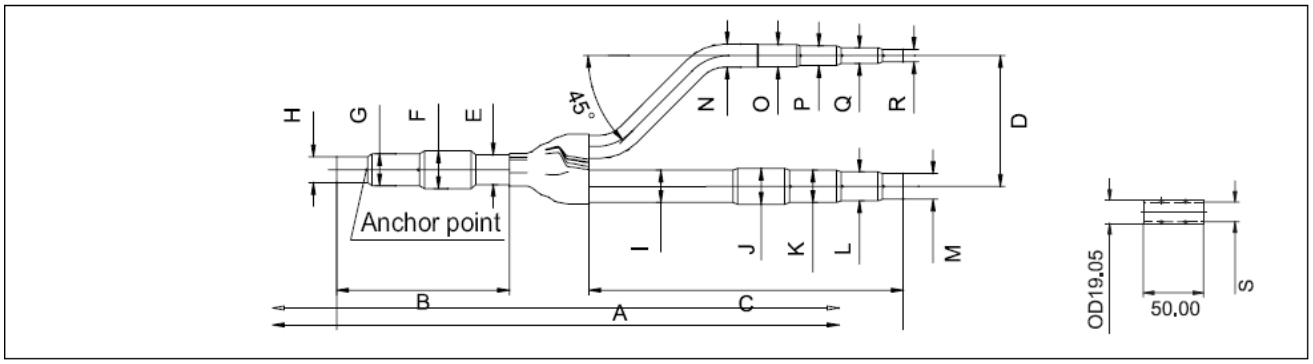
Type \ Outdoor unit capacity			MDS050B(R)5/ MDS060B(R)5/ MDS070B(R)5	MDS 080B(R)5	MDS100/ 120B(R)5	MDS140/160/ 180B(R)5	MDS200/220/ 240/B(R)5	MDS260/280/ 300B(R)5	MDS380/400/ 420/440/460/ 480/500B(R)5
Between the outdoor unit and the first branch connector									
Liquid pipe			Φ9.52×t0.8	Φ9.52×t0.8	Φ12.70×t0.8	Φ12.70×t0.8	Φ15.88×t1.0	Φ15.88×t1.0	Φ19.05×t1.0
Gas pipe			Φ15.88×t1.2	Φ22.23×t1.0	Φ22.23×t 1.0	Φ28.60×t1.0	Φ28.60×t1.0	Φ34.90×t1.0	Φ41.30×t1.5
Between branch connectors									
Liquid pipe	**Indoor units that this pipe connects to**	<25kW	Φ9.52	Φ9.52×t0.8					
		25kW≤C<33kW	-	Φ12.70×t0.8					
		33kW≤C<48kW	-		Φ12.70×t0.8				
		48kW≤C<74kW	-				Φ15.88×t1.0		
		74kW≤C<85kW	-				Φ15.88×t1.0		
		85kW≤C<102kW	-				Φ19.05×t1.0		
		≥102 kW	-					Φ19.05×t1.0	
Gas pipe	**Indoor units that this pipe connects to**	<25kW	Φ15.88×t1.2	Φ15.88×t1.0					
		25kW≤C<33kW	-	Φ22.20×t1.0					
		33kW≤C<48kW	-		Φ28.60×t1.0				
		48kW≤C<74kW	-				Φ28.60×t1.0		
		74kW≤C<85kW	-				Φ34.90×t1.3		
		85kW≤C<102kW	-					Φ34.90×t1.3	
		≥102kW	-						Φ41.30×t1.5
Between the branch connector and the indoor unit									
Liquid pipe	**Indoor units that this pipe connects to**		Consistent with the connector of the indoor unit						
Gas pipe	**Indoor units that this pipe connects to**		Consistent with the connector of the indoor unit						

Remark:

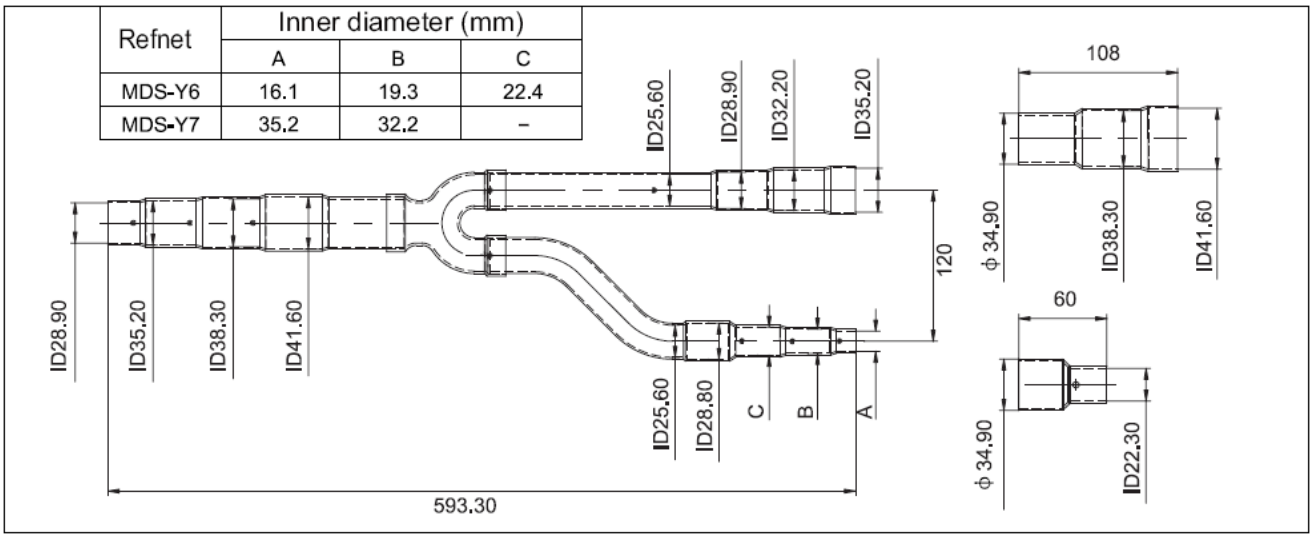
1. Pipe thickness selection is based on certain material in GB/T1527-1997. If using different material, design pressure must be 4.15 MPa according to local standard.
2. If the units are installed in corrosive environment, the pipe must be 0.2mm thicker.
3. This list shows only the minimum thickness. Bending or stretching may reduce the thickness, please consider the compensation.

3.3 Dimensions of refnet and distributor

Pipe connector model	Length (mm)				Diameter (mm)				Diameter (mm)						Diameter (mm)				
	A	B	C	D	E(Outer diameter)	F	G	H	I	J	K	L	M	S	N(Outer diameter)	O	P	Q	R
MDS-Y1	553	1 72	293	120	28.6	28.9	25.7	22.5	28.6	28.9	25.7	22.5	19.3	16.1	22.2	19.3	16.1	12.9	9.7
MDS-Y2	420	142	223	80	15.88	16.1	12.9	9.7	12.7	12.9	9.7	6.5	/	/	12.7	12.9	9.7	6.5	/
MDS-Y3	420	142	223	80	15.88	16.1	12.9	9.7	1.7	12.9	9.7	6.5	/	/	15.88	16.1	12.9	9.7	/
MDS-Y4	493	142	223	80	22.2	22.5	19.3	16.1	19.1	19.3	16.1	12.9	9.7	/	19.1	19.3	16.1	12.9	/

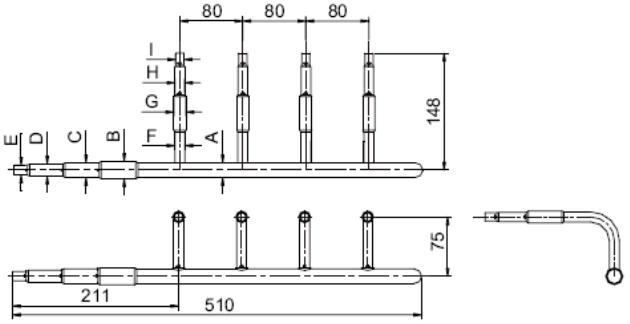


Refnet	Inner diameter (mm)		
	A	B	C
MDS-Y6	16.1	19.3	22.4
MDS-Y7	35.2	32.2	–

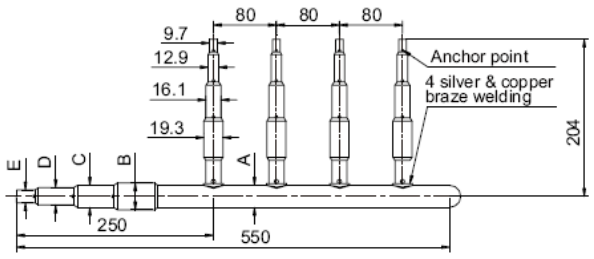


(C type refnet)

Refnet model	Inside diameter (mm)					Inside diameter (mm)			
	A (outside diameter)	B	C	D	E	F (outside diameter)	G	H	I
MDS-C1	19.05	19.3	16.1	12.9	9.7	12.7	12.9	9.7	6.5



Refnet model	Inside diameter (mm)				
	A (outside diameter)	B	C	D	E
MDS-C2	28.6	28.9	25.7	22.5	19.3
MDS-C3	25.4	25.7	22.5	19.3	16.1



3.4 Combination between indoor unit and EXV box

	Liquid Pipe Diameter (Inch)		MEX Model	
Indoor Model	**R-22**	**R-410A**	**R-22**	**R-410A**
MWMD 009G	1/4	1/4	MEX-15-2SAP-D	
MWMD 010G	1/4	1/4	MEX-15-2SAP-D	
MWMD 015G	1/4	1/4	MEX-15-2SAP-D	
MWMD 020G	1/4	1/4	MEX-18-2SAP-D	
MWMD 025G	3/8	1/4	MEX-18-3SAP-D	MEX-22-2SAP-D
MCKD 010C	1/4	1/4	MEX-15-2SAP-C	
MCKD 015C	1/4	1/4	MEX-15-2SAP-C	
MCKD 020C	1/4	1/4	MEX-18-2SAP-C	
MCKD 020A	1/4	1/4	MEX-18-2SAP-C	
MCKD 025A	3/8	1/4	MEX-18-3SAP-C	MEX-22-2SAP-C
MCKD 030A	3/8	3/8	MEX-24-3SAP-C	MEX-22-3SAP-C
MCKD 040A	3/8	3/8	MEX-24-3SAP-C	MEX-22-3SAP-C
MCKD 050A	3/8	3/8	MEX-24-3SAP-C	MEX-22-3SAP-C
MCCD 010C	1/4	1/4	MEX-15-2SAP-C	
MCCD 015C	1/4	1/4	MEX-15-2SAP-C	
MCCD 020C	1/4	1/4	MEX-18-2SAP-C	
MCCD 025C	3/8	1/4	MEX-18-3SAP-C	MEX-22-2SAP-C
MCCD 028C	-	3/8	-	MEX-22-3SAP-C
MCCD 030C	3/8	3/8	MEX-24-3SAP-C	MEX-22-3SAP-C
MCCD 038C	-	3/8	-	MEX-22-3SAP-C
MCCD 040C	3/8	3/8	MEX-24-3SAP-C	MEX-22-3SAP-C
MCCD 050C	3/8	3/8	MEX-24-3SAP-C	MEX-22-3SAP-C
MCCD 060C	1/2	3/8	MEX-24-4SAP-C	MEX-24-3SAP-C
MCMD 015E	-	1/4	-	MEX-15-2SAP-C
MCMD 015E	1/4	1/4	MEX-18-2SAP-C	
MCMD 015E	3/8	1/4	MEX-18-3SAP-C	MEX-22-2SAP-C
MCMD 015E	3/8	3/8	MEX-18-3SAP-C	MEX-22-3SAP-C
MCMD 040D	3/8	3/8	MEX-24-3SAP-C	MEX-22-3SAP-C
MCMD 050D	3/8	3/8	MEX-24-3SAP-C	MEX-22-3SAP-C
MCMD 062D	1/2	3/8	MEX-24-4SAP-C	MEX-24-3SAP-C
MDBD 080	1/2	1/2	Built-in EXV available	
MDBD 100	1/2	1/2	Built-in EXV available	

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